

Further Notes on the Forest Insects of Molokai

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(Presented at the meeting of Dec. 10, 1928)

A second expedition to the mountains of east Molokai was made by the authors, from Bernice P. Bishop Museum, July 17 to 31, 1927. Through the courtesy of Mr. James Munro, headquarters were made in Mr. Munro's mountain house, at an elevation of 1500 feet on the ridge between Kainalu and Kahawaiiki gulches, at the southeastern end of the island. From here excursions were made, as weather permitted, into the surrounding wooded region. Due to the precipitous walls of the gulches, the dense character of the undergrowth, and the wetness, only a comparatively small area was explored, and the highest elevation reached was only 3100 feet, just east of Puu Ohelo. But an interesting and representative collection of insects was made, together with numerous notes concerning their relation to the native flora.

The mountain house is located on a small flat, on the edge of the native forest, just above the dry, open, grass and weed covered forehill, the lower slope of which is planted to pineapples. On a second small flat, behind and above the house is an area of open bogs, with patches of bananas and scattered scrub. Above this the numerous small ridges are thickly covered with such plants and trees as *Metrosideros*, *Byronia*, *Coprosma*, *Suttonia*, *Gouldia*, *Pelea*, *Straussia*, *Perottetia*, *Broussaisia*, *Antidesma*, *Wikstroemia*, *Cheirodendron* and *Cibotium* tree ferns, intertwined with ieie vine (*Freycinetia*), *Smilax*, maile (*Alyxia*), staghorn and other ferns, herbs, grass, and weeds. Here and there was found a single specimen of some unusual tree, such as a large *Tetraplasandra*, on the flat, near the house.

Higher up, the forest becomes more luxuriant, because of the moisture, the trees having numerous epiphytes, and being festooned with moss and hepatics. Many of the species of plants, found lower down, persist, but staghorn fern ceases to grow, lehua (*Metrosideros*) is no longer dominant, and moisture loving species are added to the list. The principal trees of the upper rain forest are

here: *Straussia*, *Pelea*, *Cheirodendron*, *Suttonia*, *Gouldia*, *Coprosmia*, *Pipturus*; and beneath them an undergrowth of species of *Astelia*, tall *Peperomias*, *Cibotium* and other ferns, festoons of *Smilax*, and dense tangles of ieie vine (*Freycinetia*).

A little collecting was done in the lowlands, both at Kainalu and about Kaunakakai, especially in the homestead area to the west. This collecting was mainly along the roadsides and in cultivated fields and weed patches. In this way a few new records of immigrant arrivals were made.

Mr. A. M. Adamson, entomologist with the Pacific Entomological Survey, accompanied by Dr. C. Montague Cooke, Jr., made a trip to the Molokai Mountains from the Bishop Museum, June 18 to 23, 1928. He collected insects in the region about the head of Waikolu Valley, visited by the authors, December, 1925 (See *Proceedings Hawaiian Entomological Society*, Vol. 6, pp. 411-22, 1927). Determinations of many of the specimens collected by Mr. Adamson are included in the following list. For these the locality is given. Those without locality are from the Kainalu region and were collected by the authors.

HYMENOPTERA

ICHNEUMONIDAE

- Evania sericea* Cameron, 1.
- ✓ *Amblyteles koebelii* (Swezey), 1 Kawela (Adamson).
- Echthromorpha fuscator* (Fabricius), 19; 4 Kamiloloa, Waikolu (Adamson), 1 bred ex pupa of *Amorbia emigratella* by Adamson.
- Ephialtes hawaiiensis* (Cameron), 1; 1 Kamiloloa (Adamson).
- ✓ *Pristomerus hawaiiensis* Perkins, 21, one ex *Heterocrossa trigononotata*.
2 ex *Heterocrossa* in *Clermontia* fruits.
- ✓ *Angitia blackburni* (Cameron), 1 Kaunakakai; 1 Waikolu (Adamson).
- ✓ *Cremastus hymeniae* Viereck, 8, 2 ex *Omiodes scotaea*.
- ✓ *Hyposoter exiguae* (Viereck), 1 Waikolu (Adamson).
- Atrometus molokaiensis* Ashmead, 1.
- Atrometus flavifrons* Ashmead, 1.
- Casiniaria infesta* (Cress.), 1 Kamiloloa (Adamson).

ALYSIIDAE

- Aphaereta muscae* Ashmead, 4.

BRACONIDAE

- Chelonus blackburni* Cameron, 2; 1 Waikolu (Adamson).
- Lysiphlebus testaceipes* Cresson, 1 ex *Aphis medicaginis* on *Phaseolus semirectus* at sea level.

BETHYLIDAE

- Sclerodermus* sp., 21 ex *Neoclytarlus* in Smilax.
Sierola spp. (2 or 3 species), 8.
Epyris extraneus Bridwell, 1, at sea level.

DRYINIDAE

- Pseudogonatopus perkinsi* (Ashmead), 4.

SCELIONIDAE

- Anteris* sp., 1.

PLATYGASTERIDAE

- Aphanomerus pusillus* Perkins, 3 ex eggs of *Siphanta acuta*.

FIGITIDAE

- Hypodiranchus* sp. ? 11.
Eucolia impatiens (Say), 1.

CHALCIDIDAE

- Brachymeria obscurata* (Walker), 12, mostly in tomato patch at coast.
 2 *Kamiloloa* (Adamson).
Stomatocerus pertorvus Gir., 1 tomato patch, 2 pineapple fields.

PTEROMALIDAE

- Zatropis tortricidis* Crawford, 1 ex *Cremastobombycia lantanella*.

EURYTOMIDAE

- Eurytoma* sp., 1.

MISCOGASTERIDAE

- Tomocera californica* Howard, 1; 1 *Kawela* (Adamson).
Allolelaps sp. ? 1.

SPALANGIIDAE

- Spalangia cameroni* Perkins, 8 ex hornfly puparia in cow manure.

EUPELMIDAE

- Eupelmus ombrias* Perkins, 1.
Eupelmus parombrias Perkins, 1.
Eupelmus sp., 1.
Eupelmus sp., 1 *Kawela* (Adamson).
Eupelmus sp., 1 ♂ ex *Neoclytarlus* in Smilax.

ENCYRTIDAE

- Encyrtus infelix* (Embleton), 1.
Anagyrus major Perkins, 2.
Anagyrus nigricornis Timberlake, 3 on *Metrosideros*.
Nesencyrtus kaalae (Ashmead), 15 ex larva of *Nesoprosopis caeruleipennis*
 in dead *Metrosideros*.
Pauridia peregrina Timberlake, 1.
Microterys kotinskyi (Fullaway), 5.
Plagiomerus hospes Timberlake, 1.
Pseudaphycus utilis Timberlake, 3 ex *Pseudococcus nipae* on guava.
 Yellow encyrtid, 1.

APHELINIDAE

- Aphelinus gossypii* Timberlake, 1.

EULOPHIDAE

- Secodella metallica* (Ashmead), 2 ex Lepidopterous leaf-miner in Clermontia; 1 Kawela (Adamson).
Melittobia hawaiiensis Perkins, 20 ex pupa of *Pachodynerus simplicicornis*.
Pseudopheliminus vagans Timberlake, 1.
Sympiesis sp., 2.
Sympiesis sp., 14.
Eulophus sp. 1.
Eulophus sp. 3.
 Unidentified eulophid, 8.
 Unidentified eulophid, 1.

TRICHOGRAMMATIDAE

- Trichogramma minutum* Riley. Parasite of eggs of *Amorbia emigratella*.
Trichogramma semifumatum (Perkins), 11 ex eggs of *Scotorythra* sp.

MYMARIDAE

- Polynema terrestris* Perkins, 5 on *Metrosideros* and *Wikstroemia*.
Polynema rubriventris Perkins, 2 on *Gouldia*.
Polynema pyrophila Perkins, 1 on window of cabin.
Polynema jassidarum Perkins, 1 on *Sadleria*.
Polynema n. sp., 1.

FORMICIDAE

- Ponera perkinsi* Forel, 2.
Tetramorium guineense Fab., 6.
Cardiocondyla wroughtonii var. *hawaiiensis* Forel, 17 Kaunakakai, in alfalfa fields; 20 Kainalu.
Cardiocondyla nuda var. *minutior* Forel, 7; 1 Kaunakakai.
Prenelepis bourbonica race *hawaiiensis* Forel, 31.
Technomyrmex albipes (Smith), 15.
Pheidole megacephala (Fabr.), 1.
Plagiolepis mactavishi Wheeler, 4.
Leptogenys falcigera var. *insularis* Forel, 1 sea level.

MIMESIDAE

- Nesomimesa nitida* Perkins, 1 Kamiloloa (Adamson).

TRYPOXYLONIDAE

- Pison hospes* Smith, 2.

CRABRONIDAE

- Hylocrabro tumidoventris* (Perkins), 7; 1 ex nest in dead lehua; 1 Waikolu (Adamson).
Xenocrabro unicolor (Smith), 3.
Xenocrabro molokaiensis (Perkins), 6 E. Kawela (Adamson).

VESPIDAE

- Polistes aurifer* Sauss. 2; 2 Kamiloloa (Adamson).
Polistes macaensis (Fabr.) 1.
Polistes hebraeus (Fabr.) 1.

EUMENIDAE

- Odynerus molokaiensis* Perkins, 1 Kamiloloa (Adamson); 1 Halawa (Swezey).
Odynerus instabilis Perkins, 2 Kamiloloa (Adamson).
Odynerus ecostatus Perkins, 1.
Odynerus camelinus Perkins, 1.
Odynerus purpurifer Perkins, 13, sea level to 2200 feet; 2 ex nest in dead lantana.
Odynerus nigripennis (Holm.), 1 at sea coast.
Odynerus petrobins Perkins, 1 at sea coast.
Pachodynerus simplicicornis (Sauss.), nest in window of cabin; 1 pineapple field; 2 Kaunakakai.

PSAMMOCHARIDAE

- Anoplius luctuosus* (Cress.), 3; 5 Waikolu, Kamiloloa (Adamson).

AMPULICIDAE

- Dolichurus stantoni* (Ashmead), 1.

SCOLIIDAE

- Scolia manilae* Ashmead, sea level to 900 feet; in pineapple field.

PROSOPIDAE

- Nesoprosopis facilis* Smith, 1 ex nest in dead twig; 4 E. Kawela, 2 Kamiloloa, 5 Waikolu (Adamson).
Nesoprosopis caeruleipennis Perkins, 10, 2 ex nest in dead lehua.

MEGACHILIDAE

- Megachile palmarum* Perkins, 3 Kaunakakai.

XYLOCOPIDAE

- Xylocopa varipuncta* Patton, 1, Kaunakakai, in alfalfa field.

COLEOPTERA

CARABIDAE

- Colpodiscus lucipetens* (Blackburn), 16 at light and in dead *Tetraplasandra*.
Atelothrus platynoides Sharp, 43 ex Freycinetia.
 About a dozen other species from the Kainalu region.
 Three or four species, Kawela, Waikolu, Kamiloloa (Adamson).

HYDROPHILIDAE

- Hydrobius semicylindricus* (Eschscholtz), 1 in pool.
Dactylosternum subquadratum (Fairm.), 6 in banana stems.
Cercyon quisquilius (Linn.), 21 in cowdung.

DERMESTIDAE

- Dermestes vulpinus* Fabr., 1 Kaunakakai (Adamson).

CUCUJIDAE

- Cryptamorpha desjardinsi* (Guer.), 4 at light; 1 Kaunakakai (Adamson).
Silvanus surinamensis (Linn.), 1 in dried figs from Honolulu.

NITIDULIDAE

- Orthostolus robustus* (Sharp), 2 ex dead lobelioid.
Orthostolus germanus Sharp, 9 ex Freycinetia.
Eupetinus impressus (Sharp), 16 ex Freycinetia.
Nitidulid, 2 on banana.
 Three or four other native species, 14.
Carpophilus humeralis (Fabr.), 1.

STAPHYLINIDAE

- Thoracophorus blackburni* (Sharp), 2 ex dead Coprosma.
Oxytelus sculptus Grav., 15 in cowdung.
Osorius rufipes Mots., 6 ex cowdung, Sadleria, etc.
Nesomedon brunnescens Sharp, 1 at light.
Philonthus scybalarius Nord., 5 in cowdung.
Myllaena familiaris Sharp, 3 ex Freycinetia.
Oligota sp., 1 ex Freycinetia.
 Two or three other staphylinids.

COCCINELLIDAE

- Coclophora inaequalis* (Fabr.), 4 on *Metrosideros*, etc.; 2 Waikolu and Kamiloloa (Adamson).
Platyomus lividigaster Muls., 1 at sea level.
Rhizobius ventralis Er., 2; 1 Kamiloloa (Adamson).
Cryptolaemus montrouzieri Muls., 5 on *Metrosideros*, etc.; 4 Kamiloloa (Adamson).
Hyperaspis jocosa (Muls.), 3 on lantana.
Diomus notescens (Blackburn), 4 Kaunakakai and Kainalu, at sea level, on aphids on *Cassia occidentalis*.
Scymnus occellatus Sharp, Kaunakakai, on alfalfa.

ELATERIDAE

- Simodactylus cinnamomeus* (Boisduval), 5 on *Metrosideros* and pigeon peas.
Monocrepidius exsul Sharp, 6 on *Metrosideros* and at light.

SCARABAEIDAE

- Aphodius lividus* Oliv., 2 at light.
Adoretus sinicus Burm., 5 at light.

CHRYSOMELIDAE

- Epitrix parvula* (Fabr.), 8 on tomato vines at sea level.

TENEBRIONIDAE

- Gonocephalum seriatum* (Boisduval), 5 Kamiloloa (Adamson).

CICIDAE

- Cis* spp. (2 or 3 species), from Freycinetia, *Metrosideros* and Sadleria.
Apterocis sp.

ANOBIIDAE

- Mirosternus* sp., 1; 1 Makakupaia (Adamson).

CERAMBYCIDAE

- Neoclytarus* sp. Reared from dead stems of Smilax.

BRUCHIDAE

- Megacerus alternatus* Bridwell, 5 ex seeds of *Ipomoea pes-caprae*.

ANTHRIBIDAE

Araecerus fasciculatus (De Geer), 11, sea level to 100 feet, in husk of kukui nut, etc.; 1 *Kamiloloa* (Adamson).

CURCULIONIDAE

Pantomorus godmani (Crotch), 1; 12 *Kamiloloa* (Adamson).
Acalles, sp., 1 beaten from *Alyxia*.
Polytus mellerborgi (Boh.), 7 ex banana plants.
Dryophthorus squalidus Sharp, 11 ex dead *Clermontia* and *Cheirodendron*.
Dryophthorus gravidus Sharp, 1 ex dead *Clermontia*.
Dryophthorus declivis Sharp, 6 ex dead *Coprosma* and *Cheirodendron*.
Dryophthorus modestus Sharp, 9 in dead *Coprosma* and in dead frond stems of *Cibotium menziesii*, and dead *Cheirodendron*.
Dryophthorus insignis Sharp, 6 ex dead *Coprosma* and *Cheirodendron*, and in dead frond stems of *Cibotium menziesii*.
Pentarthrum prolixum Sharp, 22 ex dead frond stems of *Cibotium chamissoi* and *Cibotium menziesii*.
Oxydema fusiforme Woll., 5 in drift wood.
Nesotocus n. sp., 3, larva in pith of dead *Tetraplasandra*.
Oodemas corticis Perkins, 3 ex dead *Clermontia*; 2, *Waikolu* under bark of lobelioid (Adamson).
Oodemas, 4 undetermined species, 16.

SCOLYTIDAE

Xyleborus sp., 3 ex *Straussia*.

PROTERHINUS

Proterhinus, about a dozen species on several different trees. Being studied by Dr. Perkins.

LEPIDOPTERA

Unless otherwise indicated, the specimens were taken at light at the cabin, Kainalu, about 1500 feet elevation.

CARADRINIDAE

Eriopygodes euclidias (Meyrick), 1.
Agrotis chersotoides (Butler), 1.
Feltia dislocata (Walker), 1 *Kaunakakai*.
Euxoa hephaestaea (Meyrick), 2.
Euxoa charmocrita Meyrick, 2.

PLUSIADAE

Plusia chalcites Esp., 1.
Nesamiptis obsoleta (Butler), 3.
Adrapa manifestalis (Walker), 1.

HYDRIOMENIDAE

Eucymatoge monticolans (Butler), 8; two of these were reared from larvae on lehua leaves. Similar larvae were found feeding on lehua flowers, but failed to rear.

SELIDOSEMIDAE

- Sisyrophyta gomphias* Meyrick, 4.
Scotorythra syngonopa Meyrick, 1 reared from larva on *Antidesma platyphylum*.
Scotorythra diceraunia Meyrick, 2.
Scotorythra oxyphractis Meyrick, 2.
Scotorythra macrosoma Meyrick, 1.
Scotorythra brachytarsa Meyrick, 3.
Scotorythra rara (Butler), 4.

SPHINGIDAE

- Celerio perkinsi* Swezey, 2, one of them reared from a green caterpillar on *Straussia kaduana*.

LYCAENIDAE

- Thecla echion* Linn., 1 reared from lantana flowers.

PHYCITIDAE

- Genophantis iodora* Meyrick, 1.

PYRAUSTIDAE

- Omiodes demaratalis* (Walker), 1 caught in grassland.
Omiodes musicola Swezey, 1.
Omiodes asaphombra Meyr., Larva on Joinvillea.
Phlyctaemia hyacinthias Meyrick, 1.
Scoparia rhombias Meyrick, 1.

GELECHIADAE

- Aristotelia* sp. Leafminer in Gouldia.
Aristotelia sp. Leafminer in Coprosma.
Aristotelia sp. Leafminer in Antidesma.
Catamempsis decipiens Walsm. Larvae in crown of Freycinetia.

HYPONOMEUTIDAE

- Neelysia argyresthiella* Walsingham, 4.
Hypsmocoma phalacra Walsingham, 2.
Hypsmocoma lupella Walsingham, a larval case collected on *Freycinetia arnotti*.
Hypsmocoma chilonella Walsingham, 2 reared from larvae in dead *Smilax sandwicensis* and *Coprosma*.
Hypsmocoma chilonella ocellata Walsingham, 1 reared from dead *Wikstroemia*.
Hypsmocoma chilonella venosa Walsingham, 1 reared from dead *Wikstroemia*.
Hypsmocoma insinuatix Meyrick, 2 reared from dead *Smilax sandwicensis*.
Hyperdasys cryptogamiellus Walsingham, 2 reared from dead lehua and lantana.
Euperissus cristatus (Butler), 2 reared from pith of dead *Freycinetia arnotti*.
Diplosara lignivora (Butler), larval case in rotten wood of *Tetraplasandra hawaiiensis*.

CARPOSINIDAE

- Heterocrossa trigononotata* Walsingham, reared from terminal bud of lehua.

TORTRICIDAE

Amorbia emigratella Busck, 1.

TINEIDAE

Opostega sp. Leafminer in *Pelea*.

Philodoria splendida Walsingham, 10 swept from foliage of lehua; a leafminer on that tree.

Philodoria auromagnifica Walsingham, 2 leafminers reared from leaf of *Suttonia*.

Philodoria floscula Walsingham, 1 collected on *Pipturus albidus*. Probably a leafminer on it as the leaves had mines in them, but none was reared.

Bedellia oplismeniella Swezey, 3 reared from mines in leaves of a grass, *Oplismenus compositus*.

Opogona omoscopia (Meyrick), 1. Its larvae common in rotten bark and wood.

Cremastobombycia lantanella Busck, 3; leafminer in lantana.

CYGNODIIDAE

Petrochroa dimorpha Busck, 1.

DIPTERA

PSYCHODIDAE

Psychoda alternata Say, 14 ex ferns.

CHIRONOMIDAE

Chironomus hawaiiensis Grimshaw, 2 near Kaunakakai about flume, in which the larvae (blood worms) were numerous.

Ceratopogon sp. 22.

CULICIDAE

Aedes albopictus (Skuse) [= *A. scutellaris*], 1.

Culex quinquefasciatus Say, 3.

MYCETOPHILIDAE

Sciara molokaiensis Grimshaw, 6.

STRATIOMYIDAE

Neoxaireta spinigera (Wied.), 11, 2 Waikolu (Adamson).

DOLICHOPODIDAE

Lianculus metallicus Grimshaw, 1 Kamiloloa (Adamson).

Dolichopus exsul Aldrich, 97, very abundant about the open bogs at 1500 feet, and numerous over whole region up to 2500 feet.

Medeterus sp., 3 Waikolu (Adamson).

Dolichopodid, 64.

PIPUNCULIDAE

Pipunculus molokaiensis Grimshaw, 12.

Two other species, 3.

SYRPHIDAE

- Volucella obesa* (Fabr.), 4 Waikolu (Adamson)
Eristalus arvorum (Fabr.) 2, 2 Waikolu (Adamson).
Eumerus marginatus Grimshaw, 2.
Syritta oceanica (Macquart), 2.
Ischiodon scutellaris (Fabr.) [known as *Xanthogramma grandicornis*], 1
 Kaunakakai.
Allograpta obliqua (Say), 3 Kamiloloa, 2 Waikolu, 1 Kawela (Adamson).

TACHINIDAE

- Archytas cirphis* Curran, 4, 1 Kamiloloa (Adamson).

SARCOPHAGIDAE

- Sarcophaga pallinervis* Thomson, 17, 1 Kawela, 1 Waikolu, 1 Kamiloloa (Adamson).

MUSCIDAE

- Haematobia irritans* (Fabr.), the horn fly, 9.
Musca domestica Linn. 1.

CALLIPHORIDAE

- Chrysomya megacephala* Fabr., 1 Waikolu (Adamson).
Prostethochaeta robusta Grimshaw, 49.
Discritomyia, 2 species, 10.

ANTHOMYIDAE

- Lispocephala pallidibasis* Malloch, or near it, 9.
Lispocephala 2 spp., 2.
Limnophora arcuata Stein, 9.
Fannia canicularis (Linn.), 1, 9 Waikolu (Adamson).

BORBORIDAE

- Limosina venalicia* (Osten-Sacken), 7.
Leptocera ferruginata Stenh. 2.

TRYPETIDAE

- Eutreta xanthochaeta* Aldrich, 4. (the lantana gall fly).

EPHYDRIDAE

- Brachydeutera hebes* Cresson, 1.

DROSOPHILIDAE

- Drosophila molokaiensis*, Grimshaw, 1.
Drosophila sp. near *olgae* Grimshaw, 1.
Drosophila mulleri, ? Sturtevant, 12 Waikolu (Adamson).
Drosophila melanogaster Meigen, 17 Waikolu (Adamson).

AGROMYZIDAE

- Agromyza pusilla* Meigen, 1 Kaunakakai, from Alfalfa (Serpentine leaf-miner).
Agromyza sp. near *pusilla* Meigen, 5.

HEMIPTERA

CIMICIDAE

- Oechalia griseus* (Burm.), 2.
Oechalia nymphs, Kamiloloa (Adamson).

LYGAEIDAE

- Corizus hyalinus* (Stal.), 2 at sea level.

MYODOCHIDAE

- Metrarga contracta* Blkb., 1 on Freycinetia.
Sephora criniger (White), 2 (Adamson).
Nesocymus calvus (White), 12 Kamiloloa, Makakupaia (Adamson).
Nysius sp., 7 on Pipturus.
Nysius sp., 2 on Sadleria.
Nysius sp., 1 on Freycinetia.
Nysius sp., 8 on Scaevola, Gouldia, Sadleria, and in pineapple field; 1 at Kaunakakai.
Nysius sp., 2 on Metrosideros.
Nysius, 2 or 3 species. Kamiloloa, Makakupaia (Adamson).

TINGITIDAE

- Teleonemia lantanae* Distant, 5 on lantana.

NABIDAE

- Reduviolus capsiformis* (Germ.), 1 Kaunakakai on alfalfa.
Reduviolus blackburni (White), 1 East Kawela (Adamson).
Reduviolus tarai Kirkaldy, 2 Kamiloloa (Adamson).
Reduviolus subrufus (White), 1 on ferns.
Reduviolus procellaris Kirkaldy, 6 on Freycinetia, etc.

GERRIDAE

- Microvelia vagans* White, 32 on pool at cabin.

REDUVIIDAE

- Zelus reynardii* Kol., 2; 1 at Kaunakakai.

MIRIDAE

- Tichorhinus* sp., 13 on Straussia.
Tichorhinus sp., 1 on Straussia.
Tichorhinus sp., 3 on Alyxia, Sadleria.
Tichorhinus sp., 4 on Sadleria, Freycinetia, etc.
Kamehameha lunalilo Kirkaldy, 3.
Hyalopeplus pellucidus (Stal.).
Nesiomiris hawaiiensis Kirk., 38 and 3 nymphs on *Tetraplasandra hawaiiensis*.
Engytatus geniculatus Reuter, 18 on tomato vines near coast.
Mirids, 2 or 3 species, (Adamson).
Mirid (?), 1.

ACANTHIADAE

- Acanthia exulans* var. *molokaiensis* Kirk., 1 (Adamson).
Acanthia humifera Kirk., 5 Kamiloloa, Makakupaia (Adamson).

NOTONECTIDAE

Buenoa pallipes (Fab.), 33 in pool near sea level.

HOMOPTERA

FLATIDAE

Siphanta acuta (Walk.), 9 on *Metrosideros*, *Tetraplasandra*, guava, etc.;
15 and 8 nymphs, Kawela, Kamiloloa, Makakupaia (Adamson).

CIXIIDAE

Iolania sp., 8 on *Straussia*, *Freycinetia* and *Cibotium menziesii*.

Oliarus hevaheva Kirk., 2 (Adamson).

Oliarus euphorbiae Giffard, 3 (Adamson).

Oliarus sp., 36 on *Aspidium*, *Sadleria*, *Cibotium menziesii*.

Oliarus sp., 2 on *Sadleria*.

Oliarus sp., 3.

Oliarus sp., 3.

Oliarus sp., 1.

DELPHACIDAE

Leialoha sp., 16 on *Metrosideros*; 2 on *Metrosideros*, at Kamiloloa (Adamson).

Nesodryas sp., 1 on *Antidesma*.

Ilburnia pipturi (Kirk.), 2 on *Pipturus*; 2 on *Pipturus* at Kamiloloa (Adamson).

Ilburnia sp., 3 on *Freycinetia*; 1 on *Strongylodon*.

Ilburnia sp., 2 on *Clermontia*.

Ilburnia sp., 18 on *Sadleria*.

Ilburnia sp., 15 on *Aspidium*, *Gleichenia*, *Sadleria*.

JASSIDAE

Nesophrosyne ponapona Kirk., 5 Kamiloloa, 4 Kawela, 1 Makakupaia, on
Pipturus (Adamson).

Nesophrosyne sp., 1 Kawela (Adamson).

Nesophrosyne sp., 4 on *Antidesma*, *Suttonia*.

Nesophrosyne sp., 1 on *Broussaia*.

Nesophrosyne sp., 1 on *Byronia*.

Nesophrosyne sp., 5 on *Straussia*.

Nesophrosyne sp., 1 on *Gouldia*.

Nesophrosyne sp., 5 on *Wikstroemia*.

Nesophrosyne sp., 7 on *Gleichenia*, 3 *Suttonia*, 2 *Gouldia*, 1 *Straussia*, 1 *Wikstroemia*, 1 *Freycinetia*, 2 *Metrosideros*, 1 ferns.

Nesophrosyne sp., 8 on *Aspidium*, 7 on other ferns.

Amaranth jassid, 5 at Kaunakakai.

PSYLLIDAE

Kuwayama gracilis Crawford, numerous on *Metrosideros*.

Trioza sp., numerous on *Metrosideros*.

Hevaheva sp., nymphs in pits on upper surface of leaves of *Pelea*.

An undetermined new species very abundant on *Tetraplasandra hawaiiensis*,
the nymphs on the leaves resembling coccids.

COCCIDAE

- Saissetia* sp., on *Tetraplasandra*, *Straussia*, *Clermontia*.
Ceroplastes rubens Maskell., on *Metrosideros*, *Straussia*, *Antidesma*.
Pseudococcus longispinus (Targ.), on *Tetraplasandra*.
Pseudococcus montanus Ehrhorn, on *Freycinetia*.

NEUROPTERA

HEMEROBIIDAE

- Chrysopa microphya* McLach., 4.
Chrysopa lanatus Banks, 1 on alfalfa at Kaunakakai.
Nesomicromus vagus Perkins, 1 on *Straussia*.
Micromus vinaceus Gerst., 4.

MYRMELIONIDAE

- Formicaleo perjurus* (Walker), 1 in dry ravine at Kaunakakai.

TERMITIDAE

- Neotermes connexus* Snyder, numerous in dead wood of nearly every kind of dead tree: *Metrosideros*, *Straussia*, *Perrottetia*, *Freycinetia*, *Byronia*, *Coprosma*, *Clermontia*, *Gouldia*, *Tetraplasandra*, *Broussaia*, guava and lantana.
Kaloterms immigrans Snyder, numerous in dead algaroba trees at Kaunakakai.

CORRODENTIA

PSOCIDAE

- Psocus distinguendus* Perkins, 4 on *Metrosideros* and *Sadleria*.
Psocus lanaiensis Perkins, 4.
 Undetermined psocids, 3 or 4 species.

ODONATA

LIBELLULIDAE

- Pantala flavescens* Fab., 1.
Nesogonia blackburni (McLach.), 1.

AGRIONIDAE

- Agrion blackburni* McLach., 5.
Agrion molokaiense Perkins, 2.
Agrion deceptor McLach., 9.
Agrion amaurodytum Perkins, 5.

ORTHOPTERA

BLATTIDAE

- Allacta similis* (Sauss.), 11.

TETTIGONIIDAE

- Banza molokaiensis* (Perkins), 5.
Conocephalus saltator (Sauss.), 1.
Atractomorpha ambigua Bol., 1 at coast.

GRYLLIDAE

Paratrigonidium pacificum (Scud.), 34 mostly on ferns. One with a nematode worm.

Leptogryllus apicalis Perkins, 3.

Leptogryllus deceptor Perkins, 1.

DERMAPTERA

LABIDURIDAE

Euborellia annulipes (Lucas), 1.

Chelisoches morio (Fab.), 1.

Anisolabis eteronoma Borelli, 9 Kamiloloa (Adamson).

Insects Listed per Host Tree

METROSIDEROS COLINA POLYMORPHA

Hymenoptera

Nesoprosopis caeruleipennis Perkins, nest in rotten branch.

Hylocrabro tumidoventris (Perkins), nest in rotten branch, stored with dolichopodid flies.

Odynerus purpurifer Perkins, caught on blossoms.

Pristomerus hawaiiensis Perkins, parasite on *Heterocrossa trigononotata* in buds.

Nesencyrtus kaalae (Ashm.), parasite of larva of *Nesoprosopis caeruleipennis*.

Anagyrus nigricornis Timberlake, swept from foliage. A mealybug parasite.

Sympiesis sp., parasite of psyllids.

Polynema terrestris Perkins, swept from foliage. Parasite on leafhopper eggs.

Coleoptera

Proterhinus sp., in pith of dead twigs.

Dryophthorus sp., larvae in dead wood.

Lepidoptera

Eucymatoge monticolans (Butl.), larvae on new leaves and on flowers.

Heterocrossa trigononotata Walsm., larvae in terminal buds.

Hyperdasys cryptogamiellus Walsm., larvae in rotten wood.

Philodoria splendida Walsm., leafminer.

Hemiptera

Nysius sp., on foliage.

Siphanta acuta (Walker), on foliage and young twigs.

Leialoha sp., on foliage.

Nesophrosyne sp., on foliage.

Kuwayama gracilis Crawford, on leaves, without galls.

Triozia sp., in galls on leaves, numerous.

Ceroplastes rubens Maskell, on leaves.

Neuroptera

Neotermes connexus Snyder, in dead wood.

Corrodentia

Psocus distinguendus Perkins, on bark.

EUGENIA SANDWICENSIS

Coleoptera

Proterhinus sp., in dead twigs.

Cis sp., in dead twigs.

STRAUSSIA KADUANA

Hymenoptera

Microterys kotinskyi (Fullaway), swept from foliage. A scale parasite.

Coleoptera

Proterhinus sp., under bark.

Xyleborus sp., Ambrosia beetle. Boring in recently dead wood.

Lepidoptera

Celerio perkinsi Swezey, one reared from larva on leaves.

Scotorythra sp., larva on leaves. Failed to rear.

Hemiptera

Tichorhinus sp., two species on leaves.

Nesophrosyne sp., on foliage.

Aphid, on foliage.

Ceroplastes rubens Maskell, on foliage.

Saissetia sp., on foliage.

Neuroptera

Nesomicromus vagus Perkins, preying on aphids.

Neotermes connexus Snyder, in dead wood.

GOULDIA AXILLARIS

Hymenoptera

Eupelmus sp., swept from foliage.

Eulophid, probably a parasite of *Proterhinus*.

Polynema rubriventris Perkins, swept from foliage. A leafhopper egg-parasite.

Coleoptera

Proterhinus sp., under bark.

Anobiid, larvae in pith and under bark.

Oodemus sp., in dead wood.

Lepidoptera

Aristotelia sp., a leafminer.

Hemiptera*Nysius* sp., on foliage.*Nesophrosyne* spp., two species on foliage.**Neuroptera***Neotermes connexus* Snyder, in dead wood.**Corrodentia**

Undetermined psocid, on bark.

COPROSMA FOLIOSA

Coleoptera*Dryophthorus declivis* Sharp, in dead wood.*Dryophthorus modestus* Sharp, in dead wood.*Dryophthorus insignis* Sharp, in dead wood.*Oodemus* sp., in dead wood.*Cis* sp., in dead wood.*Proterhinus* sp., swept from dead twigs, (specimen lost).

Elaterid larva, in rotten wood.

Lepidoptera*Hypomocoma chilonella* Walsm., larva in dead wood.*Aristotelia* sp., a leafminer.**Neuroptera***Neotermes connexus* Snyder, in dead wood.

BYRONIA SANDWICENSIS

Coleoptera*Proterhinus* sp., swept from dead twigs.**Lepidoptera***Scmnoptepia* sp., larva in dead wood.**Hemiptera***Nesophrosyne* sp., on foliage.**Neuroptera***Neotermes connexus* Snyder, in dead wood.

SUTTONIA LESSERTIANA

Coleoptera

Undetermined anobiid, larva in dead wood.

Lepidoptera*Eulia* sp., larvae on leaves.*Philodoria aurornagnifica* Walsm., a leafminer.**Hemiptera***Nesophrosyne* spp., two species on foliage.

Orthoptera

Banza molokaiensis Perkins, one pair hiding in webbed leaves.

WIKSTROEMIA FOETIDA

Hymenoptera

Figitid, swept from foliage. Probably a parasite of the leafminer.

Eupelmus sp., swept from foliage.

Anagyrus sp., swept from foliage. A mealybug parasite.

Trichogramma minutum Riley, parasite of *Amorbia* eggs on leaf.

Polynema terrestris Perkins, swept from foliage. A leafhopper egg-parasite.

Lepidoptera

**Euxoa hephaestea* (Meyr.), larva on leaves.

Amorbia emigratella Busck, egg mass on leaf.

Archips postvittatus (Walk.), larvae on leaves.

Hyposmocoma chilonella ocellata Walsm., larvae and pupae in rotten wood.

Hyposmocoma chilonella venosa Walsm., larvae and pupae in rotten wood.

Diptera

Agromyza sp., a leafminer.

Hemiptera

Nesophrosyne sp., swept from foliage.

Pseudococcus sp., on foliage.

Corrodentia

Undetermined psocid, on bark.

Thysanoptera

Undetermined thrips, under dead bark.

ANTIDESMA PLATYPHYLLUM

Lepidoptera

Scotorythra symgonopa Meyrick, larva on leaves. Reared.

Aristotelia sp. (?), leafminer. Failed to rear.

Hemiptera

Nesodryas sp., swept from foliage.

Nesophrosyne sp., swept from foliage.

Ceroplastes rubens Maskell, on leaves.

* This is the moth described as *Euxoa wikstroemiae* by Swezey (Proc. Haw. Ent. Soc., IV, p. 377, 1920). Enough specimens have now been reared and collected to show sufficient variation to connect it with specimens of *haephestea*, which species was originally described from specimens collected in the N. W. Koolau Mts., Oahu. The species is now known on Oahu, Kauai and Molokai.

PIPTURUS ALBIDUS

Hymenoptera

Secodella metallica (Ashm.), parasite of leafminer.

Coleoptera

Nitidulid, swept from foliage.

Lepidoptera

Scotorythra sp., larva on leaves.

Vanessa tammeamea Esch., larva on leaves.

Philodoria floscula Walsm., leafminer.

Hemiptera

Nysius sp., on foliage.

Ilburnia pipturi (Kirk.), on foliage.

PELEA MOLOKAIENSIS

Lepidoptera

Opostega sp., leafminer.

Hemiptera

Hevaheva sp., nymphs in pits on upper surface of leaves.

BROUSSAISIA ARGUTA

Hymenoptera

Nesoprosopis facilis Sm., nest in dead twig.

Lepidoptera

Semnoprepia sp., larvae in dead wood.

Hemiptera

Nesophrosyne sp., on foliage.

Orthoptera

Banza molokaiensis (Perkins), hiding among leaves.

CHEIRODENDRON GAUDICHAUDII

Coleoptera

Dryophthorus squalidus Sharp, in rotten wood.

Dryophthorus declivis Sharp, in rotten wood.

Dryophthorus modestus Sharp, in rotten wood.

Dryophthorus insignis Sharp, in rotten wood.

Lepidoptera

Spheterista sp., larvae on leaves.

TETRAPLASANDRA HAWAIIENSIS

Hymenoptera

Tomocera californica Howard, scale parasite. Swept from foliage.

Trichogramma semifumatum (Perkins), reared from eggs of

Scotorythra under bark.

Coleoptera

- Colpodiscus lucipetens* (Blkb.), in cavities of dead branches.
Nesotocus sp., in dead branch.
Dryophthorus squalidus Sharp, in rotten wood.
Cryptolaemus montrouzieri Muls., predacious on mealybugs.

Lepidoptera

- Scotorythra* sp., egg clusters under loose bark.
Diplosara lignivora (Butl.), in rotten wood.

Hemiptera

- Nesomiris hawaiiensis* Kirkaldy, numerous on foliage.
Siphanta acuta (Walker), on foliage.
 Psyllid, an undetermined species very numerous on leaves. Nymphs resembling coccids.
Saissetia sp., on leaves.
Pseudococcus longispinus (Targ.), on leaves.

Neuroptera

- Neotermes connexus* Snyder, in dead branches.

CLERMONTIA GRANDIFLORA

Hymenoptera

- Nesoprosopis facilis* Sm., nest in hollow twig.
Sierola sp., swept from foliage.
Secodella metallica (Ashm.), parasite of leafminer.

Coleoptera

- Carabid, in dead hollow stem.
 Nitidulid, under bark.
 Staphylinid, in rotten fruit.
 Elaterid, larva in rotten stem.
Dryophthorus gravidus Sharp, in rotten stem.
Dryophthorus squalidus Sharp, in rotten stem.
Oodemas corticis Perkins, in rotten stem.

Lepidoptera

- Heterocrossa* sp., larvae in fruit.
Philodoria sp. (?), leafminer.
Opogona omoscofa (Meyrick), larvae in rotten wood.

Hemiptera

- Saissetia* sp., on leaves.

Neuroptera

- Neotermes connexus* Snyder, in dead wood.

ALYXIA OLIVAEFORMIS

Coleoptera

- Proterhinus* sp., swept from dead twigs.
Acalles sp., swept from dead twigs.

Hemiptera

Tichorhinus sp., swept from foliage.

FREYCINETIA ARNOTTI

Coleoptera

Atelothrus platynoides Sharp, at axils of leaves.

Nitidulid, at axils of leaves.

Lepidoptera

Catamempsis decipiens Walsm., larvae in crown of living plant.

Euperissus cristatus (Butl.), larvae in pith of dead stems.

Hemiptera

Anthocorid, predacious bug.

Ilburnia sp., on foliage.

Pseudococcus montanum Ehrhorn, between leaves of crown.

Neuroptera

Neotermes connexus Snyder, in dead stems.

JOINVILLEA ADSCENDENS

Lepidoptera

Omiodes asaphombra Meyrick, larvae on leaves.

SMILAX SANDWICENSIS

Hymenoptera

Nesoprosopis facilis Sm., nest in beetle burrow in dead stem.

Sclerodermus sp., parasite of *Neoclytarlus*.

Eupelmus sp., parasite of *Neoclytarlus*.

Coleoptera

Neoclytarlus sp., larvae boring in dead stems.

Oodemas sp., in dead stems.

Proterhinus sp., in dead stems.

Lepidoptera

Hyposmocoma chilonella Walsm., larvae in dead stems.

Hyposmocoma insinatrix Meyrick, larvae in dead stems.

ASTELIA VERATROIDES

Hymenoptera

Cremastus hymeniae Viereck, parasite of *Omiodes* larvae.

Coleoptera

Carabidae, two species in axils of leaves.

Lepidoptera

Omiodes scotaea (Hampson), larvae on leaves.

MUSA SAPIENTUM

Coleoptera

- Polytus mellerborgi* (Boh.), at base of stems. Larvae in corms.
Dactylosternum subquadratum (Fairm.), in decaying stems. A predator.
Cryptamorphia desjardinsi (Guer.), on dead leaves.

Dermaptera

- Labia* sp., on the leaves. A predator.

CIBOTIUM CHAMISSOI

Coleoptera

- Pentarthrum prolixum* Sharp, in dead frond stems.
Proterhinus sp., in dead frond stems.
Cis sp., in dead frond stems.

CIBOTIUM MENZIESII

Coleoptera

- Carabidae, two or three species in dead frond stems.
 Elaterid larva, in dead frond stems.
Pentarthrum prolixum Sharp, in dead frond stems.
Dryophthorus modestus Sharp, in dead frond stems.
Dryophthorus insignis Sharp, in dead frond stems.
Oodemas sp., in dead frond stems.
Proterhinus sp., in dead frond stems.

Hemiptera

- Oliarus* nymph, in dead frond stems.

SADLERIA CYATHEOIDES

Hymenoptera

- Polynema jassidarum* Perkins, an egg-parasite of jassid eggs.

Coleoptera

- Proterhinus* sp., in dead frond stems.
Cis sp., in dead frond stems.

Hemiptera

- Nysius* sp., swept from fronds.
 Mirid, swept from fronds.
Oliarus sp., swept from fronds.
Ilburnia spp., two species, swept from fronds.
Nesophrosyne sp., swept from fronds.

ASPIDIUM CYATHEOIDES

Hymenoptera

- Polynema* sp., parasite of leafhopper eggs.

Lepidoptera

Batrachedra sp., larvae feeding on sporangia.

Hemiptera

Oliarus sp., swept from fronds.

Nesophrosyne sp., swept from fronds.

GLEICHENIA DICHOTOMA**Hemiptera**

Nysius sp., swept from fronds.

Reduviolus sp., swept from fronds.

Ilburnia sp., swept from fronds.

Nesophrosyne sp., swept from fronds.